

**ABSTRACT OF THE INVENTION**

5 Low-cost haptic interface device implementations for interfacing a user with a host  
computer. A haptic feedback device, such as a mouse or other device, includes a housing  
physically contacted by a user, and an actuator for providing motion that causes haptic sensations  
on the device housing and/or on a movable portion of the housing. The device may include a  
sensor for detecting x-y planar motion of the housing. Embodiments include actuators with  
eccentric rotating masses, buttons having motion influenced by various actuator forces, and  
10 housing portions moved by actuators to generate haptic sensations to a user contacting the driven  
surfaces.